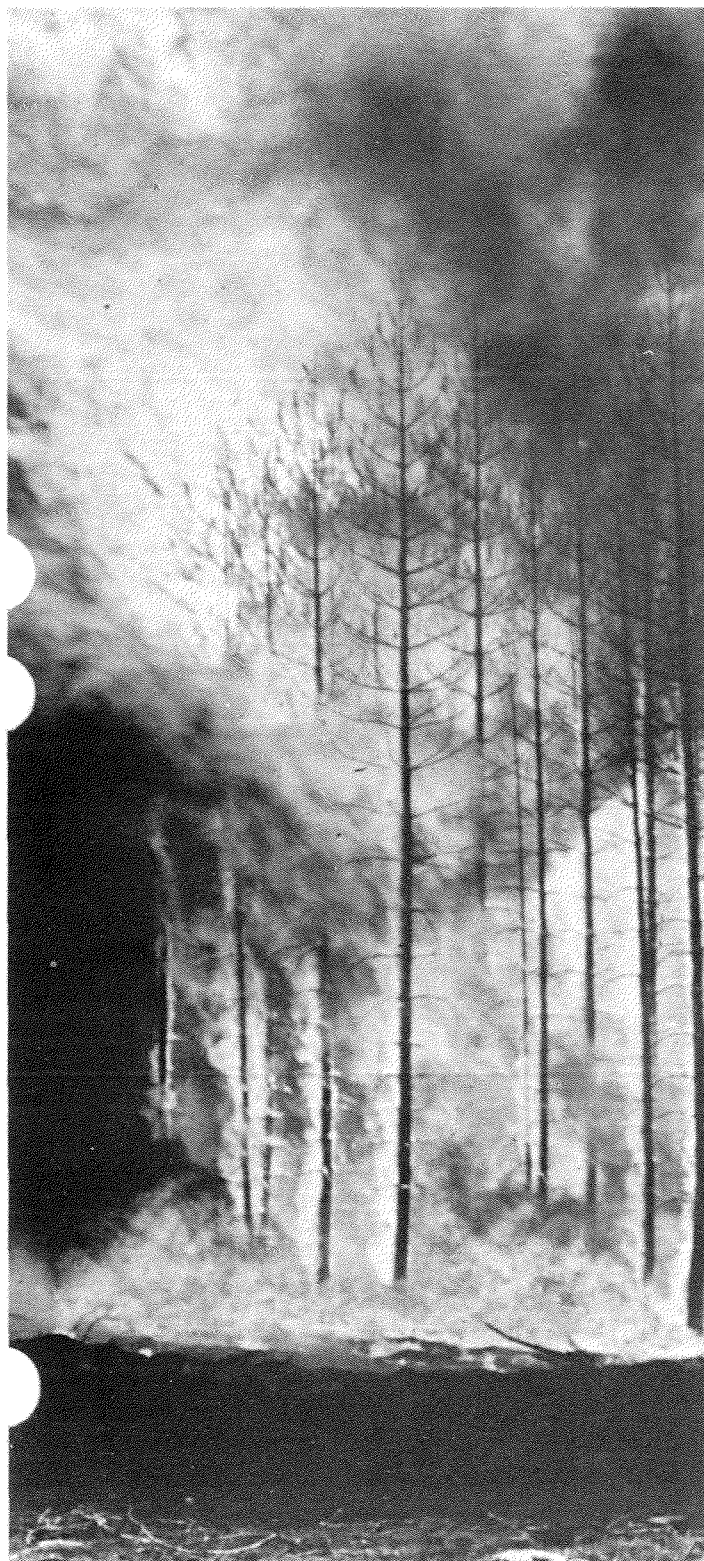


fact sheet

FIRE IN THE FOREST



history

Although Canadians are spared most of nature's great calamities, they are more than familiar with one of the most spectacular — wildfire. In fact, lightning fires preceded man's arrival on the North American continent some 20,000 years ago. Evidence of extensive and repeated fires is found in the presence of charcoal in soil profiles, fire scars on old trees, and the reports of early explorers.

Indians caused many forest and prairie fires, sometimes when using fire for protection against insects, or while burning vegetation to expose wildlife or to improve grazing. Early explorers, missionaries, fur traders and land surveyors contributed to a further increase in wildfires before the 19th century.

The most dramatic increase in fires took place in the 19th and early 20th centuries, as waves of settlers, prospectors, lumbermen and railway builders moved west and north. Finding the forest a serious hindrance to settlement and cultivation, they often had a somewhat irresponsible attitude towards fire. In addition, the accumulation of logging debris and the construction of railway rights-of-way greatly increased fire hazard.

A number of catastrophic fires during this period gave impetus to the development of organized forest fire control in Canada.

In New Brunswick, the Great Miramichi Fire of 1825 burned over 6,000 square miles and took 160 lives. A very dry summer in 1901 set the scene for a fire in northern Ontario that claimed one life and destroyed 3,000 square miles of timber.

Fernie, British Columbia, was destroyed by a fire in

FOREST FIRE LOSSES IN CANADA

	Average 1963-72 1973	
Number of Fires	7,855	7,605
Area Burned	2,062,000 acres 835 000 hectares	2,927,000 acres 1 185 000 hectares
Damage	\$14 million	\$11.3 million
Control Costs	\$45 million	\$49.6 million
Total Losses	\$59 million	\$60.9 million

1908 that took 25 lives and caused \$5 million property damage. In 1911 the Porcupine – Cochrane fire killed 73 and covered an area of 864 square miles. Five years later another conflagration in northern Ontario, the disastrous Matheson fire, burned over 1,000 square miles and took 223 lives.

fires today

Every region of Canada below the tree line has experienced vast and destructive forest fires during the past 200 years; many areas have been burned over more than once. Destructive wildfires continue to occur, but organized fire control, using modern technology, has greatly reduced their extent, especially in easily accessible areas.

Today, lightning starts 25 per cent of all forest fires in Canada, and accounts for more than half the total area burned. The remaining 75 per cent of fires are caused by human carelessness. Although woods operations, land clearing and railroads are important sources of man-caused fires, recreationists — campers, hunters, fishermen — are the major offenders. And the cost to the taxpayer is high (see table page 1).

The period from April to October is generally regarded as the forest-fire season, but practically all the fires occur from May to August. In a typical year, most of the damage is caused by a small number of very large fires.



The lightweight portable power pump is one of the most useful modern developments in forest firefighting.



Because of their versatility, helicopters are being used increasingly in firefighting operations.

protection

The provinces are responsible for fire protection over the lands within their boundaries — altogether, this constitutes about 80 per cent of Canada's productive forests. In addition, 200,000 square miles of federally administered land is protected, most of it in the northern territories. Only some of the remote northern regions are not yet entirely covered by systematic detection and suppression capabilities.

Organized forest-fire protection in Canada can be traced back to the early 1900's. Initial efforts were limited by lack of manpower, inadequate equipment,



Despite modern technical advances, hand-tool crews are still essential in the battle against forest fire.

poor communications and the inaccessibility of much of the forested land. But by the twenties, aircraft were being used for detection, transportation and, to a limited extent, for water-bombing.

The effectiveness of aircraft in fire-control operations increased dramatically after World War II, when military aircraft such as the PBY Canso and B-26 bomber were converted for dropping water and retardant chemicals. The postwar years really mark the beginning of the modern era of forest-fire control in Canada.

Today, forest firefighting depends heavily on the use of aircraft. Airtankers have been developed with varying capacities to suit different needs, from the Beaver (80 gallons) to the giant Martin Mars flying boat (6,000 gallons). The Canadair CL-215, the world's first aircraft designed specially to combat forest fires, was designed and built in this country. Helicopters, because of their versatility and their accuracy for water and retardant dropping, are being used increasingly in forest-fire suppression.

Important as these advances are, water dropping remains primarily a holding action and must be closely coordinated with or followed by control action on the ground. Aided by various types of mechanized ground equipment, hand-tool crews are still the "infantry" in the battle against forest fire.

However, no method or combination of forces yet developed can effectively suppress a large "crown" fire — one that spreads through the crowns of coniferous forests during high winds, sometimes at a rate of more than four miles an hour. When this occurs, men and equipment must first be brought to safety, and a new line of defence established. Sometimes a substantial area of forest must be sacrificed to gain the time needed to construct an effective firebreak against a crown fire.

beneficial uses of fire

In recent years a new dimension has been added to the science of forest-fire control — prescribed burning. This is not as contradictory as it sounds; while continuously improving techniques to control the indiscriminate burning of nature, man has also begun to take advantage of the beneficial aspects of fire by using it in those places and at those times that will provide the results he seeks.

Prescribed burning is most commonly used to reduce the hazard of logging debris and to prepare suitable ground conditions for planting or seeding. Other applications include removal of unwanted brush or tree species, improvement of wildlife habitat, control of insect and disease outbreaks, and backfiring to stop a wildfire.

Intentional burning on forested land is carried out only after a thorough evaluation of the expected results — both beneficial and adverse — and careful planning by experienced fire managers. In a prescribed burn the



A veteran aircraft of World War II, the Canso still serves forest firefighters as an efficient water bomber.

size, intensity, and rate-of-spread of the fire are under control at all times. It is obviously not a technique to be attempted by amateurs.

the natural role of fire

Since it is so spectacularly destructive, we tend to think of forest fire as a totally negative force. But in human terms it is negative only to the extent that it threatens

man's life or property, or destroys portions of the forest resource he had intended to utilize.

As a natural occurrence, forest fire is one of the principal agents of forest renewal; many of the most valuable forests today owe their existence to fire. Some timber species have adapted to fire disturbance and are, in their natural habitat, partly — and in a few cases almost entirely — dependent on fire for their reproduction.



Aftermath of a forest fire.

The capacity of jack pine, lodgepole pine, and black spruce to establish themselves following a fire highlights the dependence of these "fire" species on periodic wildfires. Their most important characteristic is the closed or serotinous cone, which remains on the tree for many years. The cone scales are held together by a resinous material that melts at about 49°C. In a fire, the thick scales prevent damage to the seed, while the heat opens the cones to disseminate their seed.

Following fire, all the requirements for good germination and early seedling growth are usually present — exposed mineral soil, partial shade provided by dead standing trees, increased sunlight, lack of competing vegetation, and release of mineral nutrients.

There are, of course, other effects of fire on the forest environment. Many small animals may be destroyed. The subsequent new growth, however, will benefit large species such as deer and moose, which prefer young, succulent vegetation.

Damage to the forest soil depends on the intensity of the fire, the depth of the duff — organic material covering the soil — and by characteristics of the soil itself. Very few fires are intense enough to cause long-lasting soil damage. Also, removal of vegetation from an area will have a pronounced effect on water quality and quantity.

the future

Forest fires will continue to occur and to challenge man's ingenuity and resources. Thanks to modern science and technology, fires are detected, and in most cases suppressed, more quickly than ever before. However, Canadians are taking to the woods in steady growing numbers, and the chances of fire starting through human carelessness are increased accordingly.

We know that more wildfires are started by people in or near the woods for recreational purposes than by any other human cause. The best chance to reduce the number of fires that start each year, then, is to make everyone who visits the woods more aware of the basic rules of fire safety, and of the importance of observing these rules faithfully.

3 STEPS TO FIRE SAFETY IN THE WOODS

1. If you are a smoker, DO NOT smoke while travelling through the forest. Stop and sit down; if using a match, break it in two before throwing it away. When finished, crush the butt carefully on a stone, or grind it into mineral soil after first clearing away the duff on the forest floor. When driving, NEVER throw a match or cigarette from the vehicle.
2. Don't build a campfire if you don't need one. When a fire has to be prepared, make it as small as possible. Scrape away all flammable material down to mineral soil over an area of several feet on all sides. The fire should be in a small pit in the centre of this area. It should also be built near a source of water if possible. NEVER build a fire against a stump or an old log. When leaving camp, always saturate ashes and coals with water, and stir thoroughly until they are cold to the touch. If water is not available, mix mineral soil with the ashes and stir until the fire is DEAD OUT.
3. If you are a cottage or camp owner, you should maintain a space of at least 100 feet between your building and the surrounding woods, cleared of all flammable materials. You should also have some basic firefighting equipment on hand — a good portable extinguisher, rake, shovel, ladder, pails, and if your water system permits, a good length of garden hose.

Cette publication est disponible en français sous le titre *Les feux de forêt*.

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